

**What is claimed is:**

1. An apparatus recognizing a size of media, said apparatus comprising:
  2. a media aligning guide being mounted on a cassette and being movable to a plurality of different positions to align media loaded in the cassette, the cassette being detachably mounted in a main body;
  5. a signal generating unit being interlocked with said media aligning guide, said signal generating unit generating a plurality of signal codes in response to a current position of said media aligning guide;
  8. a switching unit being mounted on the main body, said switching unit switching in response to the generated signal codes when the cassette is mounted in the main body; and
  10. a control unit outputting a size signal in response to said switching of said switching unit, said size signal corresponding to a size of the media loaded into the cassette.

1. 2. The apparatus of claim 1, said signal generating unit comprising:
  2. a first panel being movably mounted in a wall of the cassette, said first panel having a first plurality of signal apertures arranged in a first pattern; and
  4. a region of the wall of the cassette being adjacent to said first panel, said region having a second plurality of signal apertures formed in the wall of the cassette, said second plurality of signal apertures being arranged in a second pattern distinguishable from said first pattern, said first and second pluralities of signal apertures producing said plurality of signal codes.

1           3.     The apparatus of claim 2, said first panel being connected to said media aligning  
2         guide and moving in response to movement of said media aligning guide.

1           4.     The apparatus of claim 3, further comprising:

2         a size pattern being formed by said first plurality of apertures together with said second  
3         plurality of apertures in response to said moving of said first panel, said formed size pattern  
4         corresponding to the size of the media loaded in the cassette.

1           5.     The apparatus of claim 4, said first plurality of apertures including at least a first  
2         aperture and a second aperture, said second plurality of apertures including at least a first  
3         aperture and a second aperture, said formed size pattern comprising:

4         at least said first apertures of said first and second pluralities of apertures being aligned  
5         with each other and being not blocked and forming a through-hole through the wall of the  
6         cassette and through said first panel when the cassette is mounted in the main body;

7         at least said second aperture of said first plurality of apertures being blocked by the wall  
8         of the cassette when the cassette is mounted in the main body; and

9         at least said second aperture of said second plurality of apertures being blocked by said  
10        first panel when the cassette is mounted in the main body.

1           6.     The apparatus of claim 5, said switching unit further comprising:

2           a plurality of slide pins selectively moving forward and backward according to an  
3           interference with said signal codes generated by said signal generating unit when the cassette is  
4           mounted in the main body; and

5           a sensing unit sensing forward and backward movements of each of said slide pins, at  
6           least one of said slide pins penetrating the through-hole formed by said first apertures of said first  
7           and second pluralities of signal apertures when the cassette is mounted in the main body.

10           7.       The apparatus of claim 1, the main body corresponding to a main body of an  
11           image forming unit.

12           8.       The apparatus of claim 1, the media corresponding to recordable media.

13           9.       The apparatus of claim 1, said media aligning guide comprising:  
14           a first guide aligning the media in a first direction; and  
15           a second guide aligning the media in a second direction substantially perpendicular to  
16           said first direction.

17           10.      The apparatus of claim 1, said media aligning guide being mounted in connection  
18           with at least one guide groove formed in bottom of the cassette, said media aligning guide being  
19           moved in linear reciprocating movements along said at least one guide groove.

1        11. The apparatus of claim 1, said switching unit being movably mounted in the main  
2        body, said switching unit moving backward when the cassette is mounted in the main body, said  
3        switching unit moving forward when the cassette is removed from the main body.

1        12. The apparatus of claim 11, said switching unit further comprising:  
2              a plurality of slide pins selectively moving forward and backward according to an  
3              interference with said signal codes generated by said signal generating unit when the cassette is  
4              mounted in the main body; and  
5              a sensing unit sensing forward and backward movements of each of said slide pins.

1        13. The apparatus of claim 1, said plurality of different positions of said media  
2        aligning guide corresponding to a plurality of different positions along at least one line, said  
3        media aligning guide being movable reciprocally.

1        14. The apparatus of claim 1, said media aligning guide abutting edges of the media  
2        when the media is loaded into the cassette.

1        15. The apparatus of claim 1, the cassette being detachably mounted in the main body  
2        in a first direction, the media being fed from the cassette seriatim in a second direction, said first  
3        and second directions being perpendicular to each other.

1        16. The apparatus of claim 1, said plurality of signal codes having predetermined  
2        combinations respectively corresponding to predetermined sizes of media.

1        17. The apparatus of claim 1, said switching unit further comprising:  
2              a plurality of slide pins selectively moving forward and backward according to an  
3              interference with said signal codes generated by said signal generating unit when the cassette is  
4              mounted in the main body; and

5              a sensing unit sensing forward and backward movements of each of said slide pins.

1        18. The apparatus of claim 17, said sensing unit including photo sensors  
2              correspondingly mounted at end portions of said slide pins and detecting whether the end  
3              portions move forward or backward.

1        19. The apparatus of claim 17, said sensing unit including contact switches  
2              correspondingly mounted at end portions of said slide pins and outputting a signal to said control  
3              unit with selective turning-on and turning-off according to whether the end portions move  
4              forward or backward.

1        20. The apparatus of claim 17, said sensing unit including photo sensors  
2              correspondingly mounted adjacent to said slide pins and detecting whether said slide pins move  
3              forward or backward.

1        21. The apparatus of claim 17, said sensing unit including contact switches  
2 correspondingly mounted adjacent to said slide pins and outputting a signal to said control unit  
3 with selective turning-on and turning-off according to whether said slide pins move forward or  
4 backward.

1        22. The apparatus of claim 1, said control unit being mounted on the main body.

1        23. The apparatus of claim 1, said signal generating unit being mounted on the  
2 cassette.

1        24. The apparatus of claim 1, said size signal corresponding to an electrical signal.

1        25. The apparatus of claim 1, said media aligning guide being moved in response to  
2 touching edges of the media when the media is loaded into the cassette, said media aligning  
3 guide having a current position corresponding to the size of the media when the media is loaded  
4 into the cassette.

1        26. The apparatus of claim 25, the current position being a position selected from  
2 among said plurality of different positions of said media aligning guide.

1        27. The apparatus of claim 1, said signal generating unit comprising:

2              a first panel being movably mounted in a wall of the cassette, said first panel having a  
3              first plurality of signal apertures arranged in a first pattern;

4              a region of the wall of the cassette being adjacent to said first panel, said region having a  
5              second plurality of signal apertures formed in the wall of the cassette, said second plurality of  
6              signal apertures being arranged in a second pattern distinguishable from said first pattern, said  
7              first and second pluralities of signal apertures producing said plurality of signal codes; and

8              an interlocking unit mutually interlocking said media aligning guide and said first panel,  
9              said interlocking unit moving said first panel in response to a moving of said media aligning  
10          guide;

11          said first plurality of apertures together with said second plurality of apertures forming a  
12          size pattern in response to said interlocking unit moving said first panel, said formed size pattern  
13          corresponding to the size of the media loaded in the cassette.

1        28. The apparatus of claim 27, said formed size pattern being selected from among a  
2        predetermined plurality of different size patterns, said different size patterns corresponding to  
3        different sizes of media.

1        29. The apparatus of claim 27, said formed size pattern being selected from among a  
2        plurality of size patterns, said plurality of size patterns corresponding to different sizes of media.

1           30. The apparatus of claim 29, said first and second pluralities of apertures having a  
2 predetermined unit height.

1           31. The apparatus of claim 30, said first plurality of signal apertures being arranged  
2 adjacent to said second plurality of signal apertures to form said plurality of size patterns on a  
3 horizontal reference line to have at least more than three units of said unit height from top to  
4 bottom.

1           32. The apparatus of claim 31, said first plurality of signal apertures being arranged to  
2 be combined in correspondence with said second plurality of signal apertures.

1           33. The apparatus of claim 31, said formed size pattern corresponding to selected  
2 ones of said first plurality of apertures and selected ones of said second plurality of apertures  
3 being closed and opened in response to movement of said first panel.

1           34. The apparatus of claim 27, said second plurality of signal apertures including a  
2 first fixed signal aperture being formed in a lower portion of the wall of the cassette, a second  
3 fixed signal aperture being formed to be contacted in an upward diagonal direction of said first  
4 fixed signal aperture, a third fixed signal aperture being formed to be contacted in a upward  
5 diagonal direction of said second fixed signal aperture to be positioned above said first fixed  
6 signal aperture, and a fourth fixed signal aperture being formed to be communicated to a straight

7 upward direction of said third fixed signal aperture.

1 35. The apparatus of claim 27, at least two of said first plurality of signal apertures  
2 being arranged to be combined in correspondence with each one of said second plurality of signal  
3 apertures.

1 36. The apparatus of claim 27, at least six of said first plurality of signal apertures  
2 being arranged to be combined in correspondence with each one of said second plurality of signal  
3 apertures.

1 37. The apparatus of claim 27, said interlocking unit comprising:  
2 an arm member having a first end and a second end, said arm member being rotatably  
3 mounted on bottom of the cassette, said first end being connected with said media aligning guide,  
4 said second end being connected with said first panel.

1 38. An apparatus recognizing a size of media, said apparatus comprising:  
2 a first media aligning guide being mounted on a cassette and being reciprocally movable  
3 to a plurality of different positions along a first line in a first direction to closely align the media  
4 loaded in the cassette, the cassette being detachably mounted in a main body;  
5 a second media aligning guide being mounted on the cassette and being reciprocally  
6 movable to a plurality of different positions along a second line in a second direction to closely

7 align the media loaded in the cassette, said first direction being substantially perpendicular to  
8 said second direction;

9 a signal generating unit being interlocked with said first and second media aligning  
10 guides, said signal generating unit generating a plurality of signal codes in response to a current  
11 position of said first and second media aligning guides;

12 a switching unit being mounted on the main body, said switching unit switching in  
13 response to the generated signal codes when the cassette is mounted in the main body; and

14 a control unit outputting a size signal in response to said switching of said switching unit,  
15 said size signal corresponding to a size of the media loaded into the cassette.

1 39. The apparatus of claim 38, said signal generating unit comprising:

2 a first panel being movably mounted in a wall of the cassette, said first panel having a  
3 first plurality of signal apertures arranged in a first pattern; and

4 a region of the wall of the cassette being adjacent to said first panel, said region having a  
5 second plurality of signal apertures formed in the wall of the cassette, said second plurality of  
6 signal apertures being arranged in a second pattern distinguishable from said first pattern, said  
7 first and second pluralities of signal apertures producing said plurality of signal codes.

1 40. The apparatus of claim 39, said first panel being connected to said first media  
2 aligning guide and moving in response to movement of said first media aligning guide.

1        41. The apparatus of claim 40, further comprising:

2              a size pattern being formed by said first plurality of apertures together with said second  
3              plurality of apertures in response to said moving of said first panel, said formed size pattern  
4              corresponding to the size of the media loaded in the cassette.

1        42. The apparatus of claim 41, said first plurality of apertures including at least a first

2              aperture and a second aperture, said second plurality of apertures including at least a first  
3              aperture and a second aperture, said formed size pattern comprising:

4              at least said first apertures of said first and second pluralities of apertures being aligned  
5              with each other and being not blocked and forming a through-hole through the wall of the  
6              cassette and through said first panel when the cassette is mounted in the main body;

7              at least said second aperture of said first plurality of apertures being blocked by the wall  
8              of the cassette when the cassette is mounted in the main body; and

9              at least said second aperture of said second plurality of apertures being blocked by said  
10             first panel when the cassette is mounted in the main body.

1        43. The apparatus of claim 42, said switching unit further comprising:

2              a plurality of slide pins selectively moving forward and backward according to an  
3              interference with said signal codes generated by said signal generating unit when the cassette is  
4              mounted in the main body; and

5              a sensing unit sensing forward and backward movements of each of said slide pins, at

6 least one of said slide pins penetrating the through-hole formed by said first apertures of said first  
7 and second pluralities of signal apertures when the cassette is mounted in the main body.

1           44. The apparatus of claim 38, said signal generating unit comprising:

2           a first panel being movably mounted in a wall of the cassette, said first panel having a  
3 first plurality of signal apertures arranged in a first pattern;

4           a region of the wall of the cassette being adjacent to said first panel, said region having a  
5 second plurality of signal apertures formed in the wall of the cassette, said second plurality of  
6 signal apertures being arranged in a second pattern distinguishable from said first pattern, said  
7 first and second pluralities of signal apertures producing said plurality of signal codes;

8           a slide member being movably mounted along the region of the wall of the cassette; and

9           a first interlocking unit mutually interlocking said first media aligning guide and said first  
10 panel, said first interlocking unit moving said first panel in response to a moving of said first  
11 media aligning guide;

12          a second interlocking unit mutually interlocking said second media aligning guide and  
13 said slide member, said second interlocking unit moving said slide member in response to a  
14 moving of said second media aligning guide;

15          said first plurality of apertures together with said second plurality of apertures forming a  
16 size pattern in response to said first and second interlocking units moving said first panel and  
17 said slide member, said formed size pattern corresponding to the size of the media loaded in the  
18 cassette.

1        45. The apparatus of claim 44, said formed size pattern being selected from among a  
2 predetermined plurality of different size patterns, said different size patterns corresponding to  
3 different sizes of media.

1        46. The apparatus of claim 44, said formed size pattern being selected from among a  
2 plurality of size patterns, said plurality of size patterns corresponding to different sizes of media.

1        47. The apparatus of claim 46, said first and second pluralities of apertures having a  
2 predetermined unit height.

1        48. The apparatus of claim 47, said first plurality of signal apertures being arranged  
2 adjacent to said second plurality of signal apertures to form said plurality of size patterns on a  
3 horizontal reference line to have at least more than three units of said unit height from top to  
4 bottom.

1        49. The apparatus of claim 48, said first plurality of signal apertures being arranged to  
2 be combined in correspondence with said second plurality of signal apertures.

1        50. The apparatus of claim 48, said formed size pattern corresponding to selected  
2 ones of said first plurality of apertures and selected ones of said second plurality of apertures

3 being closed and opened in response to movement of said first panel and of said slide member.

1           51. The apparatus of claim 44, said second plurality of signal apertures including a  
2 first fixed signal aperture being formed in a lower portion of the wall of the cassette, a second  
3 fixed signal aperture being formed to be contacted in an upward diagonal direction of said first  
4 fixed signal aperture, a third fixed signal aperture being formed to be contacted in a upward  
5 diagonal direction of said second fixed signal aperture to be positioned above said first fixed  
6 signal aperture, and a fourth fixed signal aperture being formed to be communicated to a straight  
7 upward direction of said third fixed signal aperture.

1           52. The apparatus of claim 44, at least two of said first plurality of signal apertures  
2 being arranged to be combined in correspondence with each one of said second plurality of signal  
3 apertures.

1           53. The apparatus of claim 44, at least six of said first plurality of signal apertures  
2 being arranged to be combined in correspondence with each one of said second plurality of signal  
3 apertures.

1           54. The apparatus of claim 44, said first interlocking unit comprising:  
2           an arm member having a first end and a second end, said arm member being rotatably  
3 mounted on bottom of the cassette, said first end being connected with said first media aligning

4       guide, said second end being connected with said first panel.

1           55.     The apparatus of claim 54, said second interlocking unit comprising:

2           a cam protrusion being provided on bottom of said second media aligning guide; and

3           a rotating member being mounted on bottom of the cassette in a state elastically biased in

4           one direction to be rotated by an interference of said cam protrusion, one end of said rotating

5           member being connected to said slide member to constrain movement of said slide member.

6           56.     The apparatus of claim 44, said second interlocking unit comprising:

7           a cam protrusion being provided on bottom of said second media aligning guide; and

8           a rotating member being mounted on bottom of the cassette in a state elastically biased in

9           one direction to be rotated by an interference of said cam protrusion, one end of said rotating

10          member being connected to said slide member to constrain movement of said slide member.

11        57.     The apparatus of claim 38, said first media aligning guide being mounted in

12          connection with a first guide groove formed in the cassette, said first media aligning guide being

13          moved in linear reciprocating movements along said first guide groove.

14        58.     The apparatus of claim 57, said second media aligning guide being mounted in

15          connection with a second guide groove formed in the cassette, said second media aligning guide

16          being moved in linear reciprocating movements along said second guide groove.

1        59. The apparatus of claim 58, said first and second guide grooves being formed in  
2 bottom of the cassette.

1        60. The apparatus of claim 38, said second media aligning guide being mounted in  
2 connection with a second guide groove formed in the cassette, said second media aligning guide  
3 being moved in linear reciprocating movements along said second guide groove.

1        61. The apparatus of claim 38, said switching unit further comprising:

2        a plurality of slide pins selectively moving forward and backward according to an  
3 interference with said signal codes generated by said signal generating unit when the cassette is  
4 mounted in the main body; and

5        a sensing unit sensing forward and backward movements of each of said slide pins.

1        62. The apparatus of claim 61, said sensing unit including photo sensors  
2 correspondingly mounted at end portions of said slide pins and detecting whether the end  
3 portions move forward or backward.

1        63. The apparatus of claim 61, said sensing unit including contact switches  
2 correspondingly mounted at end portions of said slide pins and outputting a signal to said control  
3 unit with selective turning-on and turning-off according to whether the end portions move

4 forward or backward.

1        64. The apparatus of claim 61, said sensing unit including photo sensors  
2 correspondingly mounted adjacent to said slide pins and detecting whether said slide pins move  
3 forward or backward.

1        65. The apparatus of claim 61, said sensing unit including contact switches  
2 correspondingly mounted adjacent to said slide pins and outputting a signal to said control unit  
3 with selective turning-on and turning-off according to whether said slide pins move forward or  
4 backward.

1        66. The apparatus of claim 38, said switching unit being movably mounted in the  
2 main body, said switching unit moving backward when the cassette is mounted in the main body,  
3 said switching unit moving forward when the cassette is removed from the main body.

1        67. The apparatus of claim 66, said switching unit further comprising:

2              a plurality of slide pins selectively moving forward and backward according to an  
3 interference with said signal codes generated by said signal generating unit when the cassette is  
4 mounted in the main body; and  
5              a sensing unit sensing forward and backward movements of each of said slide pins.

1        68. The apparatus of claim 38, the cassette being detachably mounted in the main  
2 body in a first direction, the media being fed from the cassette seriatim in a second direction, said  
3 first and second directions being perpendicular to each other.

1        69. An apparatus recognizing a size of media, said apparatus comprising:  
2              a first media aligning guide being mounted on a cassette and being reciprocally movable  
3 to a plurality of different positions along a first line in a first direction to closely align media  
4 loaded in the cassette, the cassette being detachably mounted in a main body;  
5              a second media aligning guide being mounted on the cassette and being reciprocally  
6 movable to a plurality of different positions along a second line in a second direction to closely  
7 align the media loaded in the cassette, said first direction being substantially perpendicular to  
8 said second direction;  
9              a signal generating unit being interlocked with said first and second media aligning  
10 guides, said signal generating unit generating a plurality of signal codes in response to a current  
11 position of said first and second media aligning guides, said plurality of signal codes having  
12 combinations respectively corresponding to sizes of media;  
13              a switching unit switching in response to the generated signal codes when the cassette is  
14 mounted in the main body; and  
15              a control unit outputting a size signal in response to said switching of said switching unit,  
16 said size signal corresponding to a size of the media loaded into the cassette, said first and second  
17 media aligning guides being moved in response to touching edges of the media when the media

18       is loaded into the cassette, said first and second media aligning guides having a current position  
19       corresponding to the size of the media when the media is loaded into the cassette.

1           70.      The apparatus of claim 69, said signal generating unit comprising:

2            a first panel being linearly reciprocally movable in a wall of the cassette, said first panel  
3        having a first plurality of signal apertures arranged in a first pattern, said first panel being  
4        interlocked with said first media aligning guide and moving in response to movement of said first  
5        media aligning guide;

6            a region of the wall of the cassette having a second plurality of signal apertures formed in  
7        the wall of the cassette, the region of the wall being adjacent to said first panel, said second  
8        plurality of signal apertures being arranged in a second pattern distinguishable from said first  
9        pattern, said first and second pluralities of signal apertures producing said plurality of signal  
10        codes;

11           a slide member being linearly reciprocally movable along the region of the wall of the  
12        cassette, said slide member being interlocked with said second media aligning guide and moving  
13        in response to movement of said second media aligning guide;

14           a first interlocking unit mutually interlocking said first media aligning guide and said first  
15        panel, said first interlocking unit moving said first panel in response to a moving of said first  
16        media aligning guide; and

17           a second interlocking unit mutually interlocking said second media aligning guide and  
18        said slide member, said second interlocking unit moving said slide member in response to a

19 moving of said second media aligning guide, said first plurality of apertures together with said  
20 second plurality of apertures forming a size pattern in response to said first and second  
21 interlocking units moving said first panel and said slide member, said formed size pattern  
22 corresponding to the size of the media loaded in the cassette.

1 71. The apparatus of claim 70, said slide member selectively opening and closing at  
2 least one of said second plurality of signal apertures by linearly reciprocally moving along the  
3 region of the wall of the cassette.

1 72. The apparatus of claim 70, said signal generating unit forming said size pattern  
2 and forming at least one size code, said size code being formed by said slide member selectively  
3 opening and closing at least one of said second plurality of signal apertures by linearly  
4 reciprocally moving along the region of the wall of the cassette, said size pattern being  
5 distinguishable from said size code, said size pattern and said size code together corresponding to  
6 a size of the media loaded in the cassette.

1 73. The apparatus of claim 72, said first and second pluralities of apertures having a  
2 predetermined unit height, said first plurality of signal apertures being arranged adjacent to said  
3 second plurality of signal apertures to form said plurality of size patterns on a horizontal  
4 reference line to have at least more than three units of said unit height from top to bottom.

1        74. The apparatus of claim 73, said first plurality of signal apertures being arranged to  
2        be combined in correspondence with said second plurality of signal apertures.

1        75. The apparatus of claim 74, said formed size pattern corresponding to selected  
2        ones of said first plurality of apertures and selected ones of said second plurality of apertures  
3        being closed and opened in response to movement of said first panel and of said slide member.

1        76. The apparatus of claim 75, said first media aligning guide being mounted in  
2        connection with a first guide groove formed in the cassette, said first media aligning guide being  
3        moved in linear reciprocating movements along said first guide groove.

1        77. The apparatus of claim 76, said second media aligning guide being mounted in  
2        connection with a second guide groove formed in the cassette, said second media aligning guide  
3        being moved in linear reciprocating movements along said second guide groove.

1        78. The apparatus of claim 77, said first interlocking unit comprising:  
2              an arm member having a first end and a second end, said arm member being rotatably  
3        mounted on bottom of the cassette, said first end being connected with said first media aligning  
4        guide, said second end being connected with said first panel.

1        79. The apparatus of claim 78, said second interlocking unit comprising:

2           a cam protrusion being provided on bottom of said second media aligning guide; and  
3           a rotating member being mounted on bottom of the cassette in a state elastically biased in  
4       one direction to be rotated by an interference of said cam protrusion, one end of said rotating  
5       member being connected to said slide member to constrain movement of said slide member.

1           80.     The apparatus of claim 79, said switching unit further comprising:

2           a plurality of slide pins selectively moving forward and backward according to an  
3       interference with said signal codes generated by said signal generating unit when the cassette is  
4       mounted in the main body; and  
5           a sensing unit sensing forward and backward movements of each of said slide pins.

1           81.     The apparatus of claim 80, the cassette being detachably mounted in the main  
2       body in a first direction, the media being fed from the cassette seriatim in a second direction, said  
3       first and second directions being perpendicular to each other.